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(54) A combination of a mattress and a bed frame

(57) The invention relates to a combination of a mattress and a bed frame supporting said mattress, said bed frame comprising frame parts, which are adjustable about horizontal pivot pins extending transversely to the longitudinal direction of the bed frame. The mattress comprises a plurality of slats being secured near the bottom side of the mattress and extending at least substantially parallel to each other, transversely to the longitudinal direction of the mattress. The mattress is directly supported on the adjustable frame parts by means of the slats. Near the ends of the mattress means are provided by which the mattress is secured to the ends of the frame parts facing away from each other.

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Description

The invention relates to a combination of a mattress and a bed frame supporting said mattress, said bed frame comprising frame parts, which are adjustable about horizontal pivot axes extending transversely to the longitudinal direction of the bed frame, whereby said mattress comprises a plurality of slats being secured near the bottom side of the mattress and extending at least substantially parallel to each other, transversely to the longitudinal direction of the mattress.

From US Patent No. 3,538,521 a bed frame comprising adjustable frame parts is known, on which a mattress is supported, which mattress is built up of two mattress parts being in line, which are each provided with a plurality of helical springs, which are confined between layers of a resilient material, the bottom layer of which is supported on the adjustable frame parts of the bed frame. At the point where the two mattress parts join each other a belt of a flexible material is provided, which extends crosswise with respect to the mattress, said belt being located near a pivoted joint of a frame part and functioning to oppose undesirable deformation of the mattress when one part of the mattress is moved upwards relative to the other part. As a result of this an obtuse angle is formed at the point where the two parts butt against each other, however, which makes it impossible to provide an even support of the body of the user. Said US patent furthermore describes an auxiliary mattress, which is built up of a thin layer of a resilient material, such as foam rubber, at the bottom side of which slats extending transversely to the longitudinal direction of the mattress are provided, whose number may be changed according to the required stiffness. This auxiliary mattress is placed on top of the former mattress and fixed to the sides thereof, so as to be able to adapt the stiffness of the actual mattress to a particular person in a simple manner. Due to the thin construction of this auxiliary mattress the degree of comfort will be low, however.

Furthermore it has been known for many years already to use an undermattress or so-called "boxspring", which functions to support an upper mattress, on which the person using the bed lies. Such an undermattress or "boxspring" is built up of a mattress containing helical springs, which is supported by a rectangular wooden plate or a rigid frame secured to the bottom side of the mattress. Generally the mattress and the wooden plate or the frame are covered with a cloth thereby, whilst means for supporting said "boxspring" are provided near the head and foot of the wooden plate or the frame.

Such a "boxspring" in combination with a mattress supported thereon satisfies high standards of sleeping comfort but it is unable to meet the requirement of providing a possibility to place the head and/or the foot of the mattress assembly in for example an upwardly sloping position, as is increasingly being demanded in practice.

According to the invention the mattress, which is internally provided with helical springs, is directly sup-

ported on the adjustable frame parts by means of said slats, whilst near the ends of the mattress means are provided by which the mattress is secured to the ends of the adjustable frame parts facing away from each other.

Such a mattress being directly supported on the adjustable frame parts with its slats is capable of providing the effective support which is usual for a "boxspring" for an additional mattress and a person present on said additional mattress, whilst in the position in which the frame part(s) is (are) pivoted upwards the parts of the mattress supported on the frame parts that butt against each other and that include an angle with each other join each other according to a flowing line, as a result of which an effective support of the additional mattress and the person present thereon can remain ensured along the entire length of the mattress in every position of the adjustable frame parts.

It is noted that the use of so-called slatted bases is generally known per se, for example from German Gebrauchsmuster 9107306 or German Offenlegungsschrift 2059369. A slatted base of this type is built up of a large number of parallel slats arranged in side-by-side relationship in a bed frame. A slatted base of this type is used for a mattress loosely provided thereon. A combination of a mattress and slats fixed thereto in accordance with the construction according to the invention, which results in flowing mattress lines, cannot be derived from said publications, however.

The invention will be explained in more detail hereafter with reference to an embodiment of the construction according to the invention diagrammatically illustrated in the accompanying Figures.

Figure 1 is a diagrammatic view of a mattress assembly according to the invention.

Figure 2 is a sectional view of a bed assembly according to the invention being supported by a bed frame.

Figure 3 is a larger-scale, diagrammatic side view of a mattress assembly according to the invention, in a curved position thereof.

As is shown in Figure 1, a mattress assembly 1 according to the invention is supported on a bed frame 2, and more in particular to a large extent on two supporting parts 3 and 3' which are capable of pivoting movement with respect to the bed frame, by means of which the head and/or the foot of the mattress assembly 1 can be pivoted upwards from a flat position to for example the position shown in Figure 1.

Thereby the mattress assembly according to the invention is generally used as an under mattress or so-called boxspring mattress for an upper mattress (not shown) on which the user of the bed lies.

As is more particularly shown in Figures 2 and 3, the mattress assembly comprises a mattress 4 being internally provided with helical springs 5. The helical springs, which may for example have a barrel-shaped configuration and whose diameter gradually decreases from the middle towards the ends, are thereby confined between two plates 6 and 7, which are generally made of poly-

ether, and edge strips 8, which are likewise generally made of polyether.

The mattress 4 is supported by a plurality of regularly spaced-apart slats 9 extending perpendicularly to the longitudinal direction of the mattress 4, which are provided under the mattress. The slats 9 are confined between two cloths 10 and 11, which are attached together in points located between respective slats 9, so that the slats are unable to move in the longitudinal direction of the mattress 4.

As is furthermore apparent from Figure 2, the longitudinal edges 12 of the lower cloth 11 are folded upwardly over the ends of the slats 9, and the ends of the folded-over longitudinal edges 12 lying on the longitudinal edges of the cloth 10 are fastened to the ends of the slats 9 by suitable fastening means, for example a glue or staples, together with the longitudinal edges of the cloth 11.

Furthermore the parts of the cloth 10 abutting against the mattress 4 are fastened to the bottom side of the mattress, for example by gluing.

The assembly thus formed is finished by means of a covering 13 extending over the upper surface and the sides of the mattress 4 and being secured thereto, the bottom edge 14 of said covering being secured to the ends of the slats 9, for example by being glued thereto or stapled thereto.

This assembly may be supported in a bed by supporting the slats, in the manner shown in Figure 2, on slide strips 15 forming part of the bed frame 2 or of the adjustable parts 3 and 3'.

Preferably the ends of the mattress assembly 1 located near the foot and the head are locked in position with respect to the bed frame 1, in particular with respect to the free ends of the pivotal parts 3 and 3', for example by means of the plate-shaped parts 16 secured to the ends of the mattress 4 and to the bottom side of the mattress. Normally an upper mattress will furthermore be placed on the bed 2 thus fitted with the mattress assembly 1 according to the invention.

It will be apparent that the mattress assembly 1 according to the invention can be readily bent from a normally flat position, about imaginary axes extending transversely to the longitudinal axis of the assembly, by means of pivotal parts 3 and/or 3' of the bed, in order to raise the head and/or foot of the mattress assembly, as is diagrammatically illustrated in Figure 1. It is thereby effected by the construction of the mattress assembly according to the invention that in the situation where the mattress assembly has been bent from its flat position, the parts of the mattress assembly join each other according to a smooth, flowing line, so that both the upper mattress present on the mattress assembly and a person present on said upper mattress can be supported effectively and evenly along their entire lengths.

Claims

1. A combination of a mattress and a bed frame supporting said mattress, said bed frame comprising

frame parts, which are adjustable about horizontal pivot axes extending transversely to the longitudinal direction of the bed frame, whereby said mattress comprises a plurality of slats being secured near the bottom side of the mattress and extending at least substantially parallel to each other, transversely to the longitudinal direction of the mattress, characterized in that said mattress, which is internally provided with helical springs, is directly supported on the adjustable frame parts by means of said slats, whilst near the ends of the mattress means are provided by which the mattress is secured to the ends of the frame parts facing away from each other.

2. A combination according to claim 1, characterized in that plate-shaped parts are provided in the bottom side of said mattress, near the ends of said mattress, by means of which said mattress is secured to said adjustable frame parts.
3. A combination according to claim 1 or 2, characterized in that said slats are contained in said mattress by means of two layers of cloth, which are attached together in points located between said slats, whilst the layer of cloth present between said slats and said mattress is fastened to the bottom side of the mattress.
4. A combination according to claim 1, characterized in that the longitudinal edges of the one layer of cloth are folded over the ends of said slats and over the longitudinal edges of the other layer of cloth, whilst the longitudinal edges of both layers of cloth are fastened to the ends of said slats.
5. A combination according to any one of the preceding claims, characterized in that said mattress is at its upper side covered with a covering fixed to the upper side of the mattress, said covering being folded over the sides of said mattress and over the bottom side of said slats and being fixed to said slats.
6. A combination according to any one of the preceding claims, characterized in that said mattress is internally provided with barrel-shaped helical springs, whose diameter gradually decreases from the middle towards the ends.

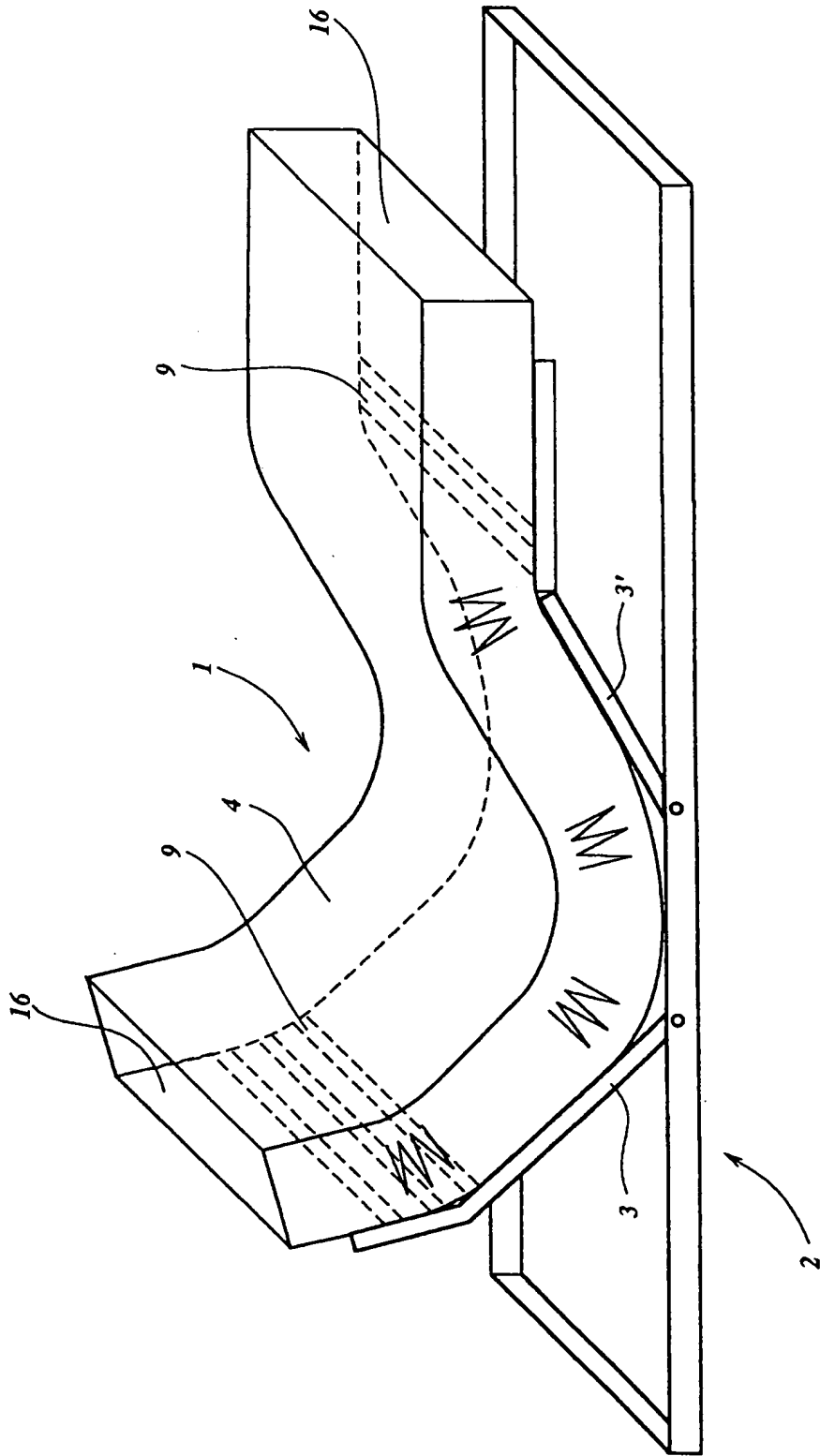


Fig. 1

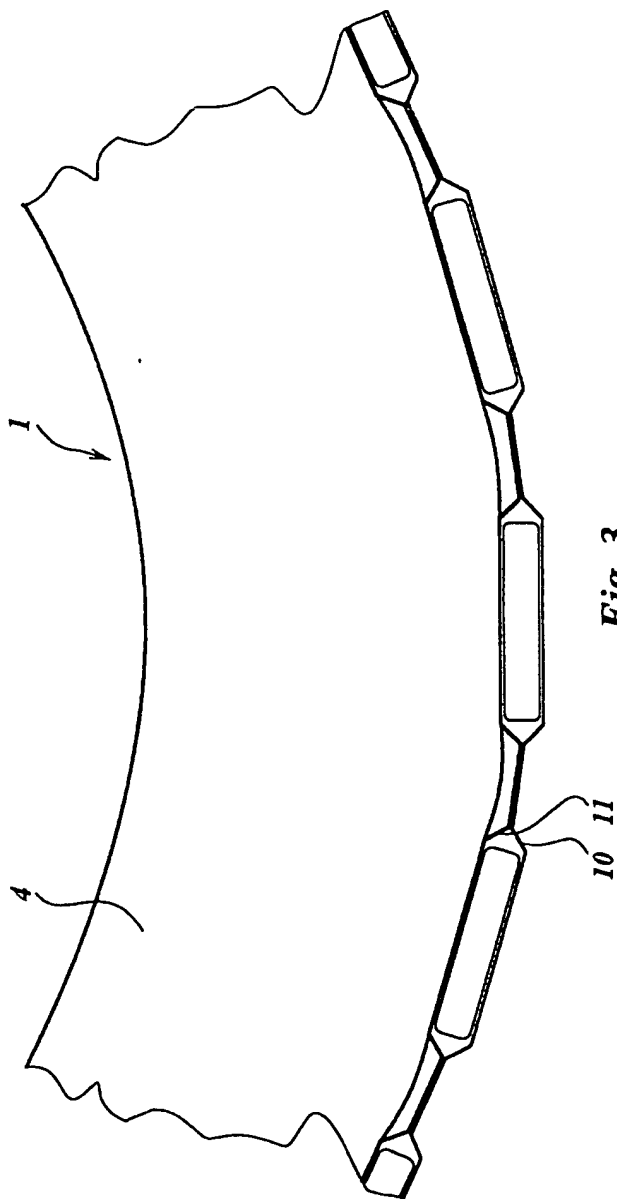


Fig. 3

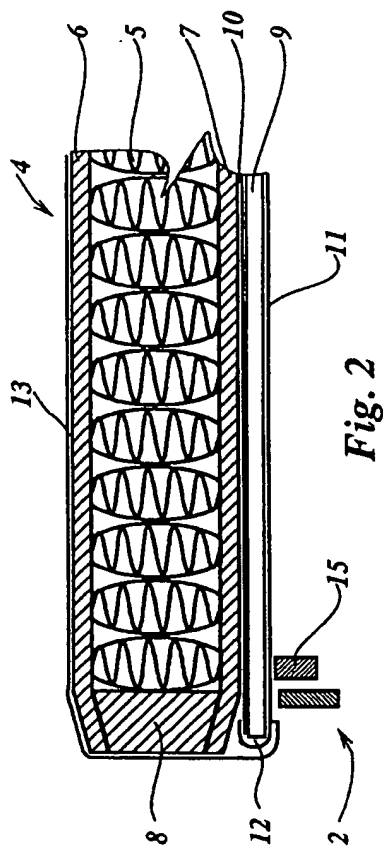


Fig. 2



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EUROPEAN SEARCH REPORT

Application Number
EP 95 20 2363

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	DE-U-91 07 306 (PLANETS HAUSGERÄTE) 16 July 1992 * page 6, line 16 - page 7, line 12; figures 1,2 *	1,3	A47C23/06 A47C27/04
A	DE-A-20 59 369 (MARPAL AG) 24 June 1971 * figures 1-3 *	1	
A	US-A-3 538 521 (BASNER) 10 November 1970 * column 3, line 62 - column 4, line 40; figures 5,6 *	1	
A	US-A-3 869 739 (KLEIN) 11 March 1975 * column 2, line 4 - line 49; figures 3,4 *	6	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			A47C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 8 December 1995	Examiner Mysliwetz, W
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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